

OBSERVATIONS ON THE VEGETATION OF LORD
HOWE ISLAND.

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(Plates I.-IV.)

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INTRODUCTORY REMARKS.

I left Sydney at 3 p.m. on the 25th March last, in company with Mr. Frank Farnell, M.P.,* Messrs. Robert Etheridge, Jun., and Edgar Waite, Curator and Zoologist respectively of the Australian Museum, and Mr. J. A. Brodie, Visiting Magistrate, bound for Lord Howe Island, in H.M.C.S. "Thetis," Captain Hildebrand. After a somewhat rough passage, we cast anchor off the island at about 6 p.m. on the 28th idem. Next morning most of our party left the "Thetis" in a whaleboat for the landing-place, about two miles off, which was reached

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after about two hours' hard pulling. The weather continued to increase in violence, so that return to the ship became impossible that day. Next day the weather increased in severity to a gale, and finally, on the afternoon of the 31st March, the "Thetis" broke her anchors and steamed for Sydney, which she reached after a perilous voyage, arriving with bunkers almost empty on the morning of the 4th April. She returned as soon as she could coal, &c., and was sighted off the island early on the morning of the 7th, took her passengers aboard again, got under weigh at 4 p.m., and after a pleasant run of 44 hours, arrived in Port Jackson at noon on the 9th April.

We were thus on the island nine days, but the weather was so boisterous for part of the time, and the rain so incessant, that collecting was seriously interfered with. Fortunately I had brought my vascula and presses ashore in the whaleboat, so that things might have been far worse. I botanised as high up as 1200 feet, reaching that elevation on two occasions, and went over the greater part of the island. Ascent to the top of either Mt. Gower or Mt. Lidgbird was physically impossible, as there is no shelter; this remains a pleasurable task to be undertaken at a favourable season. It is, of course, near the summits of the mountains that one is most likely to find additions to the flora of the island.

Examination of my collections has been greatly facilitated by reference to Mr. W. B. Hemsley's excellent "Flora of Lord Howe Island"* In the lists that follow I have not repeated the name of a species in Mr Hemsley's list unless I have some additional information (however small) in regard to it. Most of the species enumerated by Mr. Hemsley were collected by me and are now in the herbarium of the Sydney Botanic Gardens. I have arranged my plants in the sequence adopted by Mr. Hemsley, and my observations may be looked upon as supplementing his work.

* *Annals of Botany*, Vol. x. No. xxxviii. p. 221 (June, 1896).

METEOROLOGY.

Reference is suggested to Mr. H. C. Russell's paper* on the subject, showing the mildness of the climate. It is a windy island, perhaps in some measure caused by the great height of the mountains for so small an island. I was informed that it is no uncommon thing for it to blow strongly for three months at a stretch. The gusts are so strong that the houses are built low, and verandahs are unknown. Care is taken not to leave about such objects as the wind may take hold of and blow away. In consequence the "wind-break" question is perhaps the most important on the island, and most writers lay emphasis upon it. Every patch of cultivation is protected by belts of indigenous or planted trees, and these wind-breaks are watched with the greatest solicitude. The air is also humid and laden with saline matter; this was greatly against the preservation of botanical specimens. I was on the island during stormy weather, and the wind took up the sand and blew it with such force that it stung our faces, and our horse would not face it. Again, the salt spray blew nearly across the island, in one place blasting the vegetation as if it had been scalded. The rainfall is probably high. Much rain fell during our stay, and we saw many signs of land-slips of various degrees of magnitude, some of them of much importance.

As regards wind-breaks, the average Australian settler begins by cutting down as much vegetation as he can. This was the policy of the early settlers in Lord Howe Island, or at all events the clearings they made were often injudiciously chosen; in consequence the wind yearly makes sad havoc with the openings already made, and further trees crash down during every storm.

The most generally useful wind-breaks are Oleanders. There are also Norfolk Island Pines (*Araucaria excelsa*) and *Lagunaria Patersoni*, indigenous to Lord Howe Island. To a less extent, and with varying success, *Eucalyptus globulus*, *Buddleia globosa*,

* The Climate of Lord Howe Island. *Journ. & Proc. Roy. Soc. N.S.W.* xxix., 512, (1895).

Kei Apple (*Aberia Caffra*) and the Tall Bamboo (*Bambusa arundinacea*) have been tried.

I have recently despatched plants of *Pittosporum undulatum* and of Olive to the island. They should flourish, making excellent wind-breaks, while the Olive should be a useful addition to the economic plants.

SOME MINOR NOTES.

There is only one road (the coast road), mainly following the coast-line on the western side of the island; it is really only a beaten track, and it has short branches to the various houses and gardens. It is difficult to travel in the island except on these tracks, as the vegetation is so dense, hence one collector has largely followed the footsteps of another in most parts of the island.

There is no wheeled vehicle on the island, sleighs being used, drawn by one horse. They are shod with 3in. iron runners, and one can move rapidly along the coast road by their use. By the way, our horse (Norfolk Island bred) was so unlike Australian horses in that he would not eat corn, but he was ravenous for bananas and sweet potatoes.

We saw no wild pigs, although we were informed that there are still a few on the tops of Mt. Lidgbird and Mt. Gower. The same remarks apply to the goats, a few of which are also to be found on Goat or Rabbit Island. These animals largely feed on Palm seeds and on the tubers of *Elatostemma*. The islanders now keep the pigs in styes, as their destructiveness to the vegetation in the past is now well known to them. This is a matter of great congratulation to those interested in the preservation of the flora of the island.

Cockroaches are very abundant and damaged my herbarium specimens in spite of all my care.

The oranges and bananas are apparently quite free from pests. The field crops are, however, much injured by both fungus and insect pests. I was assured that at one time it was a common practice of the islanders to use a dead shark as an insecticide.

This brilliant idea was borrowed from Tasmania, and the odour of the decaying shark would drive away the aphids from a cabbage patch, for example. I should imagine that it would drive away the owner too.

Vernacular names are applied to plants on the island with great unanimity, and also with absence of variety; this is doubtless to be attributed to the smallness of the population and the frequent occasions on which they associate with one another.

Most of the male population have been sea-faring men and have spent much of their time in the tropical South Sea Islands. In consequence they are very apt to give names to plants on account of their resemblance to those growing in Fiji, Samoa and other places. I have alluded to this on p. 126.

In other respects there is a slight tendency to depart from the English of the mainland. Thus hills are called "ribs," and creeks (especially mountain creeks) are known as "runs."

BIBLIOGRAPHY.

I give some bibliographical references to supplement those given by Hemsley, at p. 283 (*op. cit.*) and also the introduction to his Flora. Nos. 1-5 I have given at some length, partly because at the present time most of the publications are rare, and partly because it is necessary that the references in so important a publication as Hemsley's work should be as explicit as possible. For the sake of uniformity I have followed Hemsley in quoting Nos. 3 and 5 in my paper, although I should have preferred to quote No. 2 as a matter of convenience.

- 1.—1870. Legislative Assembly. New South Wales. Lord Howe Island.—Official visit by the Water Police Magistrate and the Director of the Botanic Gardens, Sydney; together with a description of the Island, by Edward S. Hill. Ordered by the Legislative Assembly to be printed, 15 February, 1870. Folio, pp. 20, with one map (Reduction from H. F. White's Survey of Lord Howe Island, 1835).

Mr. Moore's sketch of the vegetation occupies pages 6 to 9. Interesting notes on the Botany are to be found in sketches by Mr. R. D. Fitzgerald at p. 13, and by Mr. E. Hill at pages 17 and 18.

2.—The same as No. 1, except that it is printed in 8vo. and occupies 60 pp. (The statement that the Reports have been submitted to Parliament is omitted).

3.—1869. New South Wales. Lord Howe's Island (Sketch of the Vegetation of, by the Director of the Botanic Gardens). Folio, pp. 4.

This report is the same as Mr. Moore's botanical report printed in No. 1 (and No. 2). From the date it is obvious that the original intention was to present it to Parliament by itself, but that it was held back for incorporation with the reports of the Water Police Magistrate and Mr. Hill, with which it forms No. 1. This is the publication quoted by Hemsley as "Moore, Rep."

4.—1882. New South Wales. Lord Howe Island (Report on present state and future prospects of). Presented to Parliament by command. Report of Hon. J. Bowie Wilson to the Colonial Secretary, dated 19th May, 1882. Folio, pp. 12, with two folded maps.

5.—Report on the present State and future Prospects of Lord Howe Island, by the Hon. J. Bowie Wilson. Published by authority. Sydney, Thomas Richards, Government Printer, 1882. 4 to. pp. 40. A reprint of No. 4, with the following additions, — table of contents, list of illustrations, introductory historical notes, pp. 1-9, together with 17 reproductions of photographs representing scenes on the island (and Ball's Pyramid).

This is the publication quoted by Hemsley as "Wils. Rep."

Following is a publication of much interest :—

6.—1853. New South Wales. Proposed New Penal Settlement. Ordered by the Council to be printed, 9th December, 1853. Chs. A. Fitzroy, Governor-General. Message No. 53.

Fep. 17 pp. with one folded map or sketch (to illustrate Dr. Foulis' Report. See below).

A number of minutes and reports are here collected together, of which the following are of special interest to us :—

a.—[Enclosure in No. 3]. Report of H. J. White, Assistant Surveyor, dated 7th January, 1835. [N.B. A reproduction of his map will be found in Nos. 1 and 2].

His Report is very brief. He gives the acreage at 3,230. He states "The only grass* to be found is a narrow belt close to the beaches, which is of a very coarse description. There are seven kinds of timber, principally of a hard and knotty description and very small. The wild fig† and cabbage trees‡ are the most abundant. . . . There is a . . . garden containing potatoes, carrots, maize, pumpkins and tarra" [taro.]

b.—[No. 5]. Statement of circumstances in reference to Lord Howe's Island, situated off the coast of New South Wales, between the Heads of Port Jackson and Norfolk Island, furnished by Dr. Foulis, of Sydney.

This is the Report that Etheridge refers to at p. 4 of *Aust. Museum Mem.* No. 2 (1889). It is referred to in *Wils. Rep.* p. 4.

The map or diagram that accompanied it is entitled "Sketch of Lord Howe Island, referred to in Dr. Foulis' Report," and was lithographed by J. Allan, 2 Bridge-street. It is on blue paper, double folio size.

The Report is dated 1st September, 1851, and occupies less than 2½ folio pages. Following are some notes from it :—"Large cabbage-trees flourish on all the flats." [Many have since been destroyed.] "There are many varieties of hardwoods, some being very large and durable and fit for building purposes." He then mentions the large crops of potatoes, pumpkins, maize, wheat and sweet potato; also bananas and vines. The Report is of

* Presumably *Spinifex hirsutus*.

† *Ficus columnaris*.

‡ *Kentia*.

rather a general character, and its value consists mainly in the map or sketch that accompanies it.

c.—[Encl. 1 in No. 12]. Remarks upon Lord Howe Island, by Capt. H. M. Denham, R.N., F.R.S. Dated 20th August, 1853.

Not of a botanical character. Refers to the "indigenous esculent, the Palm Cabbage," and speaks of "a profitable export of that close-grained timber to be found on the slopes, section-specimens of which are herewith presented." Alludes to the importance of wind-breaks.

d.—[Encl. 2 in No. 12]. Remarks on the Natural History and Capabilities of Lord Howe Island, by John Denis Macdonald, Assistant Surgeon to the Expedition (that of H.M.S. "Herald," Capt. Denham, Exploring Expedition to the South Pacific).

This consists of nearly four folio pages, and is the most important of all the documents with which it is associated. He speaks of a strip of land "now covered with tall rank grass and a British cruciferous plant (*Seneciera coronopus*).* Insists on the importance of wind-breaks. . . . "Gigantic banyan trees (*Ficus indica*)† are scattered in groups through the low lands, and the offsets from each tree are so numerous, and attain so large a size, that it is difficult to define the exact limits of any particular tree, or even point out the primitive trunks. The free extremities of the younger offsets divide into a bundle of rootlets, which ultimately reach and fix themselves in the soil. Cabbage palms grow in the valleys and on the flats, while a remarkable species of pandanus or screw pine flourishes on the sides of the hills. This has received the name of tent tree‡ from

* Perhaps *S. didyma*, Pers. (*Coronopus*, Sm., but not the *S. coronopus* of Poirét). Although this weed has been found on the island, from my knowledge of the situation referred to I believe *Lepidium* was really seen.

† *F. columnaris*.

‡ *Pandanus Forsteriana*.

the peculiar arrangement of its roots, which, taking their rise all round the main stem at determinate heights corresponding with the period of their formation, extend themselves outwards and downwards until they become fixed in the earth, so that the central trunk is supported by a cone of props, easily convertible into a tent. The leaves of this plant are usually developed in three spirals passing from right to left, but instances occur in which they take an opposite direction. Its fruit is composed of fibrous drupes clustered together in little parcels round the spadix. They are of a bright red colour when ripe, and are supposed to possess aperient properties, but the children of the island eat them with impunity.

“It is quite remarkable to observe the great variety of trees which present a similar character of foliage, but which differ so much in the texture and quality of the timber. With the exception of the palm tribe and some of the plants which have been introduced by the settlers, the prevalent form of simple leaves, as well as of the leaflets of compound ones, is ovate and acute. The creeping plants of the forest are very numerous, and not at all to be distinguished by their trunks or stems—many of which attain a diameter of four or five inches. From the tortuous way in which they trail along the ground, entwine and interlace with one another, scale the loftiest trees, wander through their closely set branches, descend and mount again, deriving fresh succour from the earth—they acquire a very great length, and in many places they are so thickly interwoven as to form impassable barriers. Besides these woody creepers, there are others, which always retain their sappy stems, and completely embower young cabbage plants and suckers of other trees.

“There is also a kind of reed or cane* with a pithy stem and stout clasping extremities to the leaves, which climbs the trees, peers above the foliage, and, like the creepers just noticed, often descends again and trails along the ground; one of these measured 136 links in length.

* *Flagellaria indica.*

“At a zone in the mountains the cabbage palms diminish in size, and a little higher up they fail altogether, but another species with entire leaves supplies their place, with a variety of trees not found in a lower position. A poisonous leguminous plant bearing large green pods,* a pale violet *Lobelia*,† and many other Australian weeds, grow in different parts. A poisonous umbelliferous plant,‡ with deeply divided leaves and lateral umbels, grows plentifully in moist places. The *Senebiera coronopus*§ (one of the British Cruciferæ) flourishes in wild luxuriance on both sides of the island, more especially on the sandy parts. The Shepherd’s Purse.|| the common chickweed,¶ the sow-thistle,** the butter-cup†† and daisy‡‡ grow wild upon the island; but the two latter are only to be found in the mountainous parts. The Lignum Vitæ§§ or Guaiacum tree and other useful woods grow on the hills. There are many species of ferns, mosses, and fungi, and the sea-weeds are very numerous.

“All the fruit trees and culinary vegetables at present growing on the island have been introduced—the bananas and vines from Port Stephens, melons, Cape gooseberries and mint from Sydney. The potatoes have been chiefly grown from Derwent (Tasmania) seed. Some time ago egg-plants and marsh [? musk—J.H.M.] melons were plentiful, but they have been neglected latterly. . . .

* *Canavalia obtusifolia*. Forrest also records a case in which the raw seeds poisoned sailors. See my *Useful Native Plants of Australia*, p. 12.

† *L. anceps*.

‡ *Apium australe*, without doubt. I was not aware, however, that it is actually poisonous, although Umbellifers growing in such a situation are often acrid.

§ *Ante*, p. 119.

|| *Capsella Bursa-pastoris*. Moore, *Rep.*, p. 2, has since recorded this. I did not observe it, and it may have been exterminated.

¶ Probably *Cerastium vulgatum*.

** *Sonchus oleraceus*

†† Probably a mistake. *Ranunculus* has not been found on the island. See p. 136.

‡‡ Perhaps *Brachycome se mentosa*.

§§ *Sophora tetraptera*.

“Exogenous timber is plentiful, of any required size; the leaves of tables 4 feet by 5 and upwards have been cut in single pieces from banyan roots, as well as those from another species of hardwood which is very common.”

These extracts show how excellent an observer Dr. Macdonald was. His report was submitted by Capt. Denham, of H.M.S. “Herald,” on 23rd August, 1853, and the letter of Macgillivray (Naturalist of the “Herald”) published in Hooker’s *Journal of Botany*, vi., 353, was dated 3rd March, 1854. Macdonald’s account of Lord Howe is much ampler than that of Macgillivray.

Macdonald’s observations on the zoology of the island are, I should imagine, valuable, and his geological observations scarcely less so, but they of course do not come within the scope of a botanical paper. The report is certainly rare; I have only seen one copy, and this partly is my excuse for publishing these lengthy extracts.

7.—Corrie, Alfred T. A Visit to Lord Howe Island. *Proc. R.G.S.* Vol. xxii., 136 (1878).

This article contains but scant reference to botanical matters.

8.—Etheridge, R., Junr. Note on the Bibliography of Lord Howe Island. *Proc. Linn. Soc. N.S.W.* [2] iv. 627 (1889). Mr. Etheridge draws attention to No. 6, and lays special stress upon Dr. Macdonald’s paper. He further discusses some geological points. I had forgotten Mr. Etheridge’s paper when I wrote my own, and Mr. W. S. Dun very kindly drew my attention to it.

9.—Moore, C., and Betche, E. Handbook of the Flora of New South Wales. List of Lord Howe and Norfolk Island Plants, Appendix i. (page 518).

Following is a list, complete as far as I know it, of those who have preceded me in collecting botanical specimens on the island:

Macgillivray, J., 1853; Macdonald, J. D., 1853; Milne, W., 1853; H.M.S. “Herald.”

Moore, C., 1869; Carron, W. W., 1869, 1871; Duff, J., 1882; King, E., 1869 to date; Sydney Botanic Gardens.

Fitzgerald, R. D. 1869, 1871, Survey Department, Sydney.

Fullagar and Lind, 1871, collectors in the pay of Baron von Mueller.

Etheridge, R., Jun., and Whitelegge, T., 1887, Australian Museum, Sydney.

DICOTYLEDONS.

MAGNOLIACEÆ.

DRIMYS HOWEANA, *F.v.M.*—Known as “Hot-bark” by the settlers. A slender small tree.

CRUCIFERÆ.

CAKILE MARITIMA, *Scop.*—Apparently rare. Not in Hemsley’s list.

LEPIDIUM FOLIOSUM, *Desc.*—Hemsley inserts this plant on Mueller’s authority, not having seen indubitable specimens himself. I have brought specimens which undoubtedly belong to this species, having six stamens and conforming to the description of *L. foliosum* in other respects.

GUTTIFERÆ.

CALOPHYLLUM INOPHYLLUM, *Linn.*—Hemsley follows Moore, *Proc. Roy. Soc. N.S.W.*, v. 31 (though doubtfully), in giving this plant a place in the flora of the island. Moore and Betche exclude it from their list of Lord Howe Island plants in their “Handbook of the Flora of New South Wales.” Under *Elæodendron* I have shown how, in my opinion, *Calophyllum* came to be recorded as an addition to the flora. I recommend that it be now dropped.

MALVACEÆ.

HIBISCUS TILIACEUS, *Linn.*—“Kurrajong.” Found on Middle Beach road, also in a swamp on Edward King’s property. The specimen on the side of a creek near the old settlement was planted. The bark is soaked in sea-water for 24 hours, when the fibre “makes better fishing lines than we can buy in Sydney.”

The bark is used for tying up bags. King informed me that the plant is called "Tooran" in the tropical islands, but I cannot trace such a name.

LAGUNARIA PATERSONI, *G. Don.*—Abundant. Known as "Sally" on Lord Howe Island, but "White Oak" in Norfolk Island. The wood is put to no purpose except to yield grubs for fishing, it being attacked almost as soon as it is felled. The same remarks apply to "Pine" (*Paria cissodendron*). The islanders say that a pretty blue beetle which is very common, is found only on *Hibiscus tiliaceus* and on this species. Cattle eat the leaves.

RUTACEÆ.

ACRONYCHIA BAUERI, *Schott.*—"Box or Yellow Wood." Three Box Woods or Yellow Woods (including the present species, *Melicope contermina*, Moore & F.v.M., and *Zanthoxylum Blackburnia*, Benth.) are recognised on the island, and they are extensively used for fencing (posts) and general building purposes; they are said to be the best timbers on the island for these uses; they are durable, split easily and work well.

MELIACEÆ.

DYSOXYLON FRASERANUM, *Benth.*—"Apple-tree." Rather plentiful, but does not come below 1,000ft., and hence is not used. Its diameter is from 1'–2'.6." It is of course the same as the "Rosewood" of the mainland, which is a valuable timber.

CELASTRINEÆ.

ELEODENDRON AUSTRALE, *Vent.*—This plant is in Hemsley's list. His reference, *F. Muell. Fragm.* ix. 77 is, however, to var. *melanocarpum*, and not to the normal species. H. Wilkinson (Wilson's Report, p. 22) in giving a list of timbers of which the names were furnished by Duff, has the name "Blue Plum" (*Eleodendron australe*), but the Blue Plum is quite a different tree (see observations on p. 130). No other evidence of its occurrence on the island is known to me. Moore (for whom Duff collected) does not add it to his list of Lord Howe plants in his and Betcher's

work (1893). I did not find *Eleodendron australe*, although it is very familiar to me; this is, of course, not conclusive evidence.

As a rule our fruits of *E. australe* (from the mainland) appear to have one-celled ovaries, with one developed seed, the second cell, where originally present, having aborted, as pointed out by Bentham. In many cases I cannot see a trace of a second cell. The same remarks apply to var. *melanocarpum*. The distinction "ovary 2-celled" as applied to *E. australe*, and "3-celled" as applied to its variety, appears to me to fall to the ground. I see no constant difference between the fruits of the two plants except in colour, and even in *melanocarpum* there is always a tinge of red endeavouring to assert itself through the superficial colouring of black.

I recommend *E. australe* to be deleted from the list of Lord Howe Island plants.

ELEODENDRON MELANOCARPUM, *F.v.M.*—Although Mueller proposed this name for a species in *Fragm.* iii. 62, he revoked it in *Fragm.* vi. 204, and he definitely alludes to it as a variety of *E. australe* (viz., *E. australe*, var. *melanocarpum*) in *Fragm.* ix. 77. He omits *E. melanocarpum* in his *Census of Australian Plants* (1889). I follow Mueller in depriving *E. melanocarpum* of specific rank. Hemsley, doubtless in consequence of Mueller's reference at *Fragm.* ix., gives *E. melanocarpum* as a Lord Howe Island plant. I recommend its elimination from the list, not only on the grounds stated, but because the black-fruited *Eleodendron* of the island is *E. curtispiculum*, Endl. To be specific, I am of opinion that neither *E. australe* nor its dark-fruited variety is to be found on the island.

ELEODENDRON CURTISPICULUM, *Endl.* (*Prod. Floræ Norfolkicæ* [1833], p. 81).—Called "Tumana" on the island; not uncommon. The tree is certainly neither *E. australe* nor its var. *melanocarpum*. I do not doubt that it is *E. curtispiculum*, Endl., the only point of non-agreement with Endlicher's description being that my fruits are not "nutantes" or pendulous (*curtispiculum*), a detail quite satisfactorily explained, in my opinion, by the fact that my

fruits are not perfectly ripe. The ovary is usually 3- but sometimes 4-celled. Endlicher's description of "greenish-black" describes the colour of the fruit well. They are more egg-shaped than those of the Australian *Elæodendrons*. They are quite tapering at the top until nearly ripe, this pointed appearance giving them an unusual appearance for an *Elæodendron* in this part of the world. The tapering appearance is owing to the delayed absorption of the style. The same thing may be noticed in *E. Roxburghii*, W. et A. pl. 71, t. 5, of Wight's "Illustrations of Indian Botany," Vol. i.

E. curtipendulum has hitherto only been recorded from Norfolk Island; it is now recorded, for the first time, as indigenous to Lord Howe Island.

E. curtipendulum goes under the name of "Tumana" in Lord Howe Island. It has a bark of a very red colour when fresh, its wood is red, and it reminded the islanders, most of whom are old sailors, to whom the tropical South Sea Islands are familiar, of *Calophyllum inophyllum*, which is widely known as Tumana. That being the case, what more simple than to christen this nameless wood Tumana. I have no doubt that through their furnishing a list of the trees of the island to Mr. Moore, nearly 30 years ago, he announced that the genus *Calophyllum* occurs in the island, placing reliance on their vernacular name of Tumana. It is a very common practice with the islanders to give plants the names of Australian or Polynesian plants they are deemed to more or less resemble. Some were manifestly so absurd that I requested my informants never to mention them again.

CUPANIA HOWEANA, Maiden, n.sp.

(Plate 1.)

Cupania sp., Moore, *Rep.* p. 3.: *Cupania anacardioides*, A. Rich., in Mueller, *Fragm.* ix., 77 and 91; Tate, *Macleay Memorial Vol.*, p. 220; Hemsley, *op. cit.*, p. 234.

In *Fragm.* ix., 91, the following passage occurs:—"C. *anacardioides*. Stamina interdum 8, e.g., in arbore ex insula Howei.

Capsula dura, intus tomentosa. Semina arillo coccineo perfecte circumclusa."

I concluded from the above that Mueller had seen fruits of a Lord Howe Island *Cupania*, but the words "Capsula . . . 'circumclusa'" have been added from an Australian specimen of *C. anacardioides*, Mr. Luehmann informs me, and Mr. Luehmann also states that the Baron never saw fruiting specimens from Lord Howe Island.

In *Fragm.* ix., 77, I find also the following statement:—"Nephelium a *N. semiglaucum* fructibus majoribus diversum."

I cannot trace a second *Cupania* (*Nephelium*) in the Melbourne herbarium. Tate (*Macleay Mem. Vol.*), as Hemsley points out, admits *N. semiglaucum* to the flora of Lord Howe Island without a sign of doubt. The latter adds "There is not a second species (*Cupania* or *Nephelium*) from the island in the Kew herbarium." I believe this is accounted for by the fact that there is not a second species on the island. The *Cupania* in question possesses undoubted affinities to both *C. anacardioides* and *C. (N.) semiglaucum*, but I brought back both flowering and fruiting specimens, which enable me to clear up the points in doubt and to state that the tree is not referable to a described species. Following is a description of it:—

A tree 30 or 40 feet high with a trunk-diameter of 12-18 inches as seen. Nearly glabrous, except the young shoots, which are densely covered with rust-coloured hairs.

Leaflets 4 to 10, usually 6 or 8, about $2\frac{1}{2}$ inches long by $\frac{5}{8}$ or $\frac{3}{4}$ inch broad, oblong, very obtuse, entire, margins somewhat recurved even in a fresh state, but when dried remarkably so. Coriaceous, pale underneath, scarcely shining above. The midrib and primary veins well defined and of a brown colour, not so prominent on the upper surface. Very shortly petiolate or sessile.

Flowers comparatively large (as large as those of *C. anacardioides*) in panicles rarely exceeding the leaves. Pedicels usually $\frac{1}{4}$ inch. Outline of the sepals sinuate, the margin membranous, the smallest about 1 line broad, the largest (the innermost) at

least twice that size. Petals about as long as the inner sepals, with large inflected auricles at the base, almost doubling the petal into the shape of the split corolla of a Goodeniaceous plant; sprinkled with hairs chiefly on the edges and margin of the auricles. Stamens 8, the filaments densely hairy almost for the whole of their length (in *C. anacardioides* hairy only for the lower half or third). Anthers oblong, smaller than in *C. anacardioides*. Attachment of filament to anther peltate. Ovary glabrous or occasionally with a few long hairs on the edges. Capsule glabrous, with coriaceous very compressed valves, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in diameter. The valves glabrous inside and showing a thickened margin as in *C. semiglauca*. Very shortly attenuate at the base, on thick pedicels of 3 lines; the sepals persistent. Seeds compressed, about 5 lines long, smooth, not shining. Arillus thin, membranous.

The principal tree called "Honeysuckle" on the island. Differs from *Cupania (Nephelium) semiglauca* (to which it is nearest allied) by the larger capsules and the shape of the petals.

The fruit sharply separates it from *C. anacardioides*, from which it also differs in the number of stamens, the hairiness of the filaments and the glabrous or nearly glabrous ovary.

LEGUMINOSÆ.

CARMICHELIA EXUL, *F. r. M.*—Known as "Grass-tree," as also *Exocarpus homoclada*, but not of course to be confused with the "Grass-trees" (*Xanthorrhœa*) of the mainland.

SOPHORA TETRAPTERA, *Mill.*—A graceful small tree of 18 inches trunk-diameter, known as "Lignum Vitæ." The wood is used for mallets and mauls.

CÆSALPINIA BONDUCELLA, *Fleming.*—This handsome, hooked trailer is called "Wait-a-while" for obvious reasons. I found it in two places, "Ned's Beach," and on Mrs. T. Nicholl's property. The islanders say they find one of these seeds, and no other, in each mutton-bird (*Puffinus*). In Samoa advantage is taken of its prickly nature to protect fruit from the flying-fox.

MYRTACEÆ.

MELALEUCA ERICIFOLIA, *Sm.*—The settlers have an idea that this is identical with a New Zealand shrub, and call it the “Kilmauk” or “Kilmogue” of N.Z., but the plant does not occur in that colony. The leaves are coarser, shorter, and more rigid than they usually are on the mainland. It no longer appears to be used medicinally or otherwise by the settlers.

ACICALYPTUS FULLAGARI, *F.v.M.*—Known as “Scalybark.” A large tree with a diameter up to 5 or 6 feet, and in some cases with buttresses big enough to stable a horse. It is the timber most frequently sawn (by pit-saw) for ordinary purposes on the island. It is surface-rooting like most of the local trees. I have heard it called “White Cedar,” because it is soft cutting and works like Australian cedar, but this is far-fetched. Wilkinson (*Duff*) *Wils. Rep.* p. 22 is mistaken in calling this tree “Honey-suckle.”

METROSIDEROS POLYMORPHA, *Gaud.*—“Red Cedar” is the name this small tree frequently goes by, but it is far-fetched, as is the designation “White Cedar” for *Acicalyptus*.

UMBELLIFERÆ.

APIUM PROSTRATUM, *Labill.* (*Syn. A. australe*, *Thou.*).—Known locally as “Wild Celery.” King informed me that this plant has been cultivated on the island, and an inferior celery produced.

RUBIACEÆ.

RANDIA STIPULOSA, *C. Moore & F.v.M.*—Has been labelled in the Sydney Botanic Gardens *R. macrophylla* for many years. It is known as “Green Plum” from the colour of its large fruit. The timber is said to last well in the ground, and it burns well.

PSYCHOTRIA CARRONIS, *F.v.M.*—A slender small tree bearing a profusion of black fruits as large as small grapes, which render it ornamental and win for it the common local name of “Black Grape.”

COPROSMA PUTIDA, *C. Moore & F.v.M.*—“Stinkwood.” Has ornamental red fruits. A twig or leaf broken emits a bad odour,



while a log of the timber placed on the fire by accident will render a house unbearable. Certainly the poetry of the charming rambles in Lord Howe Islands is sometimes destroyed by ill-smelling vegetation accidentally brushed against and bruised. Cattle eat the leaves.

COMPOSITE.

OLEARIA BALLII, *F.v.M.*—Ascent to Mt. Gower, on the faces. Not lower than 1,000ft. above sea-level.

CASSINIA TENUIFOLIA, *Benth.*—This plant is known as “Broom-bush” or “Tea-tree.” *Cassinias* are never known as “Tea-trees” on the mainland. The silvery whiteness of the young foliage is striking in appearance.

COTULA AUSTRALIS, *Hook. f.*—Not in Hemsley’s list.

SONCHUS OLERACEUS, *Linn.*—Not in Hemsley’s list. I am of opinion that it is indigenous, although I find that Moore (*Report*, p. 3) is inclined to a different opinion.

EPACRIDEE.

DRACOPHYLLUM FITZGERALDI, *F.v.M.*—The inflorescence is at the end of the long spreading branches, and is erect, reminding one of the habit of Horse-chestnut blossom. The colour of the flowers is a pale flesh-pink. This noble tree is up to 6 feet in diameter. The timber burns well, but is not otherwise used, fortunately, because it does not descend below a thousand feet

SAPOTACEÆ.

SIDEROXYLON HOWEANUM, *F.v.M.* (*Syn. Achras Howeana, F.v.M.*).—“Axe-handle Wood,” “Ivory Wood.” An ornamental small tree with foliage reminding one of that of a Camellia. My specimens were not in fruit; the fruit is described by Mueller as about an inch long (*Fragm.* ix. 72).

Genus? ————— (Plate II.)

BLUE PLUM.—Following is a brief account of a fruit which I inadvertently at first referred to *Sideroxylon costatum*, *F.v.M.*:—It is not that plant, nor is it a plant hitherto recorded from

Lord Howe Island. I am endeavouring to procure additional botanical material, in order that its position may be settled. I have given a figure of the fruit.

The fruit is an indehiscent drupe, the fleshy husk or testa being thinner than in the common walnut, and of a bluish or glaucous cast (hence the vernacular name). Like the walnut, this encloses a hard-shelled two-valved nut. I have collected them 3 inches long and $1\frac{3}{4}$ broad. In spite of the nut being narrower in proportion to its length, and of its possessing well-marked longitudinal ribs, there is no doubt it resembles that of the walnut a good deal, and it is the only nut on the island, as far as I know, which possesses such a resemblance to *Juglans regia*. Unfortunately it is not edible.

It extends from the coast high into the mountain, and is very abundant. Its fruit was frequently to be seen on the ground. It is often washed into the sea-water, and the ribbed, bony inner layer of the pericarp forms a readily noticeable object when washed back on to the beach. It would preserve its characters after prolonged immersion in sea-water, and I suggest that collections of drift-fruits be examined for it.

Wilkinson (*Wils. Rep.*, p. 22) refers to Blue Plum, which he (or rather Duff) erroneously attributes to *Eleodendron*, and this is the only record I can find of the name, which is, nevertheless, in common use by the islanders.

JASMINEÆ.

OLEA PANICULATA, *R.Br.*—"Maulwood." Found all over the island, and up to a thousand feet elevation. Attains a diameter of 4 feet. Used for fencing, firewood and all purposes.

APOCYNÆÆ.

ALYNIA RUSCIFOLIA, *R.Br.*—Very plentiful and known as "Holly" and "Christmas Bush," the former on account of its shining rigid foliage, the latter on account of its bright red fruits.

OCHROSIA ELLIPTICA, *Labill.*—Known as "Mangrove," and the fruits are believed by the islanders to be poisonous.

ASCLEPIADACEÆ.

MARSDENIA SP.—Not in Hemsley's list. Follicles broadly boat-shaped when ripe, and used by the children for toy boats. The stems very rough and tough; have been likened to shark's skin. I could find no flowers, and further enquiry is desirable.

LOGANIACEÆ.

GENIOSTOMA PETIOLOSUM, *C. Moore and F.v.M.*—Gathered by me when in fruit; stated to emit a bad odour when in flower and to be called "Stinkwood" on that account. Cattle eat the leaves.

GESNERACEÆ.

NEGRIA RHABDOTHAMNOIDES, *F.v.M.*—Flowers yellow. Known on the island as "Pumpkin-flower."

BIGNONIACEÆ.

TECOMA AUSTRO-CALEDONICA, *Bur.*—Bentham, Mueller and Moore determined this plant, which occurs all over the island, as *T. australis*. I follow Hemsley with doubt in calling it *T. austro-caledonica*. My specimens are not very good, but I was quite surprised to find that the plant could be considered other than our common and variable *T. australis*. I will return to the subject when I get first-class specimens.

MYOPORINEÆ.

MYOPORUM INSULARE, *R.Br.*—Known as "Juniper" because of the appearance of the berries. It is one of the best timbers for boat-building, *e.g.*, knees or breast-hooks. It does not readily split on nailing. It is one of the most esteemed firewoods on the island, burning green.

VERBENACEÆ.

AVICENNIA OFFICINALIS, *Linn.*—Mangrove. Rare; only found near Dawson's Pt.

LABIATÆ.

PLECTRANTHUS PARVIFLORUS, *Willd.*—Not in Hemsley's list.

NYCTAGINEÆ.

PISONIA UMBELLIFERA, *Seem.* (Syn. *P. Brunoniana*, Endl.).—Known locally as “Pump Wood.” Remarkable for the small regular corky patches on the stem.

CHENOPODIACEÆ.

SALICORNIA AUSTRALIS, *Sol.*—Not in Hemsley’s list.

POLYGONACEÆ.

MUEHLENBECKIA AXILLARIS, *Walp.*—Climbs up trees for 20 or 30 feet. Sometimes called “Bed Vine,” as the islanders say it is dried for beds in New Zealand, as it is elastic.

RUMEX BROWNII, *Campd.*—Not in Hemsley’s list.

PIPERACEÆ.

PIPER EXCELSUM, *Forst.*—Worthy of cultivation by reason of its large, broad, handsome glabrous leaves, up to 9 inches in diameter, and showy red spikes of flowers. Known as “Kava” on the island, an additional instance of the use of tropical South Sea island names for plants supposed by the islanders to be identical with their tropical namesakes.

LAURINEÆ.

CRYPTOCARYA TRIPLINERVIS, *R. Br.*—“Blackbutt” is the name by which this tree is known on the island, but it must not be confused with the Blackbutt of the mainland (*Eucalyptus pithularis*). It is found all over the island, and is esteemed a good all round timber. It is one of the best firewoods on the island, burning green. It attains up to 5 and 6 feet in diameter. It is an exception to the general run of Lord Howe timbers, which are usually surface-rooters. “Blackbutt” is accounted to be the most difficult tree to stump (root out) in the island.

SANTALACEÆ.

EXOCARPUS HOMOCALADA, *F. v. M.*—Known as “Grass-tree.” See also *Carmichaelia*.

LORANTHACEÆ.

VISCUM ARTICULATUM, *Burm.*—Very abundant on the island. Without special search, I observed it on *Elæodendron curtipendulum*, *Cryptocarya triplinervis*, *Hemicyclia australasica*, *Coprosma putida*, and *Pimelea longifolia*.

EUPHORBIACEÆ.

HEMICYCLIA AUSTRALASICA, *Muell. Arg.*—"Grey Bark." One of the handsomest trees on the island, its rich glabrous foliage setting off the profusion of orange-coloured and red fruits. It is well worthy of cultivation. It is the only tree on the island on which I observed variegated leaves. The islanders use it for firewood. The best Jews' Ear fungus (*Hirneola*) grows on this tree.

BALOGHIA LUCIDA, *Endl.*—Not used on Lord Howe Island, but the islanders state that its red astringent juice is commonly used as a stain for furniture made of Pine (*Arancaria excelsa*). In Lord Howe Island it attains a trunk-diameter of 18" to 2'.

OMALANTHIUS LESCHENAULTIANUS, *A. Juss.* (Syn. *Carumbium populifolium*, *Reinw.*)—Abundant on the island, and known as "Dog-wood." Has corky excrescences resembling those on *Pisonia*, but less marked. In Samoa the leaves are used as a poultice to reduce the swelling and inflammation after circumcision.

URTICEÆ.

FICUS COLUMNARIS, *F.v.M. & C. Moore.*—"Banyan" of Lord Howe Island. Banyans can readily be noted, even at a considerable distance, amidst the surrounding arboreal vegetation, by the brown appearance of their foliage, which gives them the look of fading or dying trees. The Banyan strikingly resembles the Moreton Bay Fig (*Ficus macrophylla*). Cattle eat Banyan leaves and they are reputed to be a good cream-yielder. As regards a similar use for the Moreton Bay Fig, see the *Agric. Gazette of N.S.W.*, 1893, p. 609, and 1894, p. 206.

ELATOSTEMMA RETICULATUM, *Wedd.*, var. GRANDE, *Benth.* (B. Fl. vi. 184).—A succulent plant of 2 to 4 feet in height, growing in

rich soil in the brushes at the sea-level, and close to the sea, while it is common as high in the mountain as I ascended. It forms large tubers which form excellent pig-feed. When pigs were allowed to roam at will over the island, they used to largely feed on both the tubers and foliage of this plant. In Moore's list (1869) the name of the species is given as *E. nemorosum*, Seem., (see tab. lxi. *Fl. Vitiensis*), and certainly the two plants are very closely allied.

BOEHMERIA CALOPHLEBA, *F.v.M.*—This plant is often associated with the *Elatostemma*, and its range is precisely the same, so far as I observed it, although it is far less common. It is strikingly like *Pipturus argenteus* of our northern rivers, and in the absence of books I noted it in my pocket-book as *Pipturus*. I am of opinion that the reference to *Pipturus* in Moore's paper (*Trans. Roy. Soc. N.S.W.* v. 31) was suggested by this plant, in spite of the fact that the list in this paper and also in Moore's 1869 list contains *Bahmeria sp.* I can hardly agree with Hemsley (*op. cit.* p. 284) that *Pipturus* is a slip for *Elatostemma*, as the appearance of the two plants is so widely different, particularly when growing.

Genus? ————— (Plate III.)

BLACK PLUM.—I came across a tall tree with smooth bark, and purplish-black fruit (hence the name of the tree). It does not descend below a thousand feet, growing where *Hedysepe Canterburyana* grows.

The plant is not in Hemsley's list, nor in Endlicher's *Prod. Ins. Norfolk*. I do not doubt that it is the tree referred to by name only by Wilkinson (Duff) in *Wils. Rep.*, p. 22, as "Black Plum, *Achras australis*." The fruit certainly does bear a superficial resemblance to that of *Achras australis* of the mainland, but only a superficial one.

Unfortunately I collected only leaves and fruit, and as it will be some time before I can obtain flowering specimens, I describe the material I have got, leaving the naming of the plant for a future occasion.

Twigs more or less angular, the petiole slightly twisted and about half an inch long, leaves alternate, broadly ovate or nearly orbicular, coriaceous, shiny on the upper surface, entire, the venation reticulate-pinnate, usually with 5 or 6 primary veins on each side of the midrib. The largest leaves seen are $4\frac{1}{4}$ inches long by $3\frac{1}{4}$ broad, the average perhaps 4 inches by 3. Stipules linear, half the length of the petioles.

Fruit deep purple or nearly black, nearly egg-shaped or perhaps approaching an ellipse (half as long as broad) in longitudinal section, and sometimes with a blunt point at the apex. Size—say, $2\frac{1}{2}$ inches long by $1\frac{1}{2}$ broad by 1 inch thick.

Removal of the thin husk displays the embryo with two fleshy plano-convex cotyledons filling the seed; the embryo is clothed with short brown hairs. The radicle is inferior.

Bearing in mind Hemsley's note on the subject (*op. cit.* p. 281), I made careful search for *Cordyline*, *Ranunculus*, *Epilobium* and *Veronica*, but found none.

MONOCOTYLEDONS.

IRIDEÆ.

MOREA ROBINSONIANA, *F.r.M.*—The "Wedding Lily." This grows in basaltic soil right on the edge of the rocky shore, where it is plentifully bathed with sea-spray. There I noticed patches forty or fifty feet across, and with the leaves at least seven feet high. I observed smaller patches well up in the mountain, say a thousand feet up. It was fruiting at the time of my visit, and I was informed that the flowers of the mountain form are pure white, while those near the coast are tinged with purple.

JUNCACEÆ.

JUNCUS sp., probably the *J. MARITIMUS*, *Lam.*, of Hemsley's list.—Grows up to 10 and 11 feet high in the swamps on Robins' land. Both he and King agree that it is an introduced plant, and that it spread so rapidly and grew so coarsely (so stock would

eat it) that it would hide the bullocks. Robins informed me that he has been using his best endeavours to eradicate it for the past five years. With difficulty he collected for me two or three specimens. In habit the plant seems to be more like *J. pallidus*, but in the absence of stamens and seeds one could not say that it is not *maritimus*.

PALMÆ.

The mountain roads, or rather tracks through the palms extend for miles, and words cannot describe the exquisite beauty of the scenery. After the first few hundred feet of ascent, the palm in greatest abundance is "Curly Palm" (*Kentia Belmoreana*), and apart from the beautiful mountain and marine scenery, the marvellous profusion of palms of all sizes, their overhanging foliage frequently meeting overhead, made an impression on me that will never be effaced from my memory.

Collection of Palm-seeds.—The collection of palm-seeds (fruits), or "seeding" as it is commonly called, is the staple industry of Lord Howe Island. Seeding is performed by climbing the trees, work which is now mainly done by the boys of the island or hired boys (usually lads indentured through the Charitable Institutions Department of N.S.W.). They buckle a leather strap (or strap extemporised from palm-leaves), pass it over both ankles, and by its aid can "shin" the trees with a minimum of fatigue. When the spikes of seeds are reached they are jerked off by a smart downward pull; all the spikes are placed in one hand and thus carried down to the ground. The fruits (seeds or "nuts") are then removed from the spike by holding the spike firmly in one hand and pressing each fruit off by the thumb of the other.

The average load down the rocky mountain paths is one and a half bushels for strong boys of say 15 years of age, and perhaps two bushels for an ordinary man. The maximum load is three bushels, but this is only carried by the strongest young men, and perhaps the carrying of so heavy a load has something of bravado in it, for when they arrive at the coast-level they are usually

pretty well tired out. The seeds are put into gunny-bags, and all bags are conveyed down the mountain in the "cubby," a kind of knapsack arrangement borrowed from New Zealand, for it is a Maori device for carrying their children. The cubby is a sort of parallel braces, and by its use the carrier of a load can have both hands free. A load having been fixed up in the cubby, it is placed on sloping ground, and the bearer lies on his back, places his arms through the knapsack loops, and raises himself to an erect position.

Palm-seed if planted when *just changing colour*, will germinate more readily (Edward King says three months earlier), than those which are dead-ripe. A drawback to dead-ripe seeds is the readiness with which they are attacked by weevil. It is recommended to ship Thatch and Umbrella Palm seeds when yellowish, as they carry best at that stage.

Thatch Palm.—The leaves of *K. FORSTERIANA* are, as is well known, used for thatching purposes; the stems, cut to four, were at one time largely used for battens, but now they are rarely put to such use as the trees are too valuable as seed-yielders.

The largest trees of this species are on the Boat Harbour flats on the south-east side of the island. There they attain a diameter of 18 inches or 2 feet and a height of 60ft. This species grows in belts all over the island.

This and the other two palms (the Curly Palm alone excepted) take twelve months to mature the seeds after the flower appears. The seeds of the Curly Palm are greenish-black when ripe; those of the other three species are red.

Curly Palm.—*KENTIA BELMOREANA* will not grow on the coral-sandy ground; it is always found on basalt. This species takes three years to fully mature its seeds after the flower appears.

Umbrella Palm.—*HEDYSCEPE (KENTIA) CANTERBURYANA* is the largest-fruited palm of the island. It is called "Umbrella Palm" owing to its rounded top. It does not descend below 900 feet, and forms a belt all round Mts. Lidgbird and Gower.

Aware that the spatha was unknown, I made diligent search and found one at the foot of a tree, while a boy "shinned"

the tree for fully 50 feet and brought me the inflorescence in perfect condition. Because of its delicate nature I took a sketch of the spatha on the spot, and also made the notes which follow. I produce the spatha to-night, and regret my efforts to preserve the inflorescence were not attended with success. My attendant conveyed it tenderly down the mountain and very few flowers became detached. It was raining and the air near the coast was laden with saline matter in addition, so that ordinary methods of plant-drying were out of the question. I was destitute of appliances and decided to plunge it into boiling water, and hung it from a rafter to drain, but the continued damp weather never permitted it to dry, and in spite of all I could do I was unable to land it in Sydney in good condition. On my next visit to the island I will make special preparations with the view of properly preserving it.

The spatha was hitherto unknown. I was fortunate to obtain one specimen. Situated as I was I was quite unable to preserve such an organism as palm-inflorescence, which is a difficult matter under favourable circumstances, but I made a few notes on the inflorescence within a few minutes after its collection.

Male flowers in pairs. Two (or one pair) to each notch. The flowers have a sickly smell, as indeed have those of most palms. The inner perianth of the male flowers consists of 3 almost equilateral segments, one of the segments being distended so as to form a solid angle. The colour of the perianth shades from pale orange-red to pale yellow or yellowish-green at the tip. The stamens ten in all the flowers I examined.

Some of the flowers are hermaphrodite, according to my notes, there being a central club-shaped pistil, contracted somewhat in the centre of the style, the stigma not trifid as is usually the case with palms. This is probably an unfertilized ovary.

The shape of the spatha is shown in the drawing. (Plate IV., figs. 1-2.) Length 13 inches, greatest width 6 inches.

The spatha is rather thin, showing longitudinal markings. It is thickened along the edges and at the top and base. It is

situated immediately above the last season's fruits, and immediately below the long sheathing base of the petiole.

I removed from the tree some inflorescence which had lost its spatha. It was 12 inches long and 10 broad.

The sheathing base of the petiole has been already described by Duff (*Wils. Rep.* p. 31).

Mountain Palm.—CLINOSTIGMA MOOREANUM, *F.v.M.*, is exclusively confined to the tops of the highest mountains, where it is subject to considerable cold. Its maximum height is 10 feet.

Uses of Palms.—I have alluded to thatch and battens under *K. Forsteriana*; palm-leaves are eaten by cattle, but only the tips of the leaf-segments, stock never cropping them close to the rhachis except in cases of extreme hunger. Palms are used for wind-breaks, and are planted for that purpose.

PANDANEÆ.

My predecessor, Mr. Charles Moore, who visited the island in 1869, says, *Moore Rep.* p. 2, "The Pandanus or Screw Pine, of which there appear to be two species, marks the vegetation in a peculiar manner wherever it appears. One species, known to the settlers as the "Tent Tree," *Pandanus Forsteri*, Moore, grows plentifully in some parts of the flats, but is more general on the mountain sides, increasing in number as they ascend, and attaining an elevation of at least 2,000 feet." Mr. Moore does not describe the supposed second species.

In accordance with Mr. Moore's instructions to Mr. Duff, who accompanied the Hon. J. Bowie Wilson to the island in 1882, the latter enquired into the Pandanus question, and Mr. Moore states—"It will be seen . . . that, as I surmised, there are sufficient characteristics . . . to prove the existence of a second species of Pandanus."

Mr. Duff's report* is in these words:—"The mountain Pandanus is evidently another undescribed plant, differing from

* *Wils. Rep.*, p. 29.

Pandanus Forsteriana in having smaller and more numerous branches; shorter, more undulating and narrower leaves; cones 6 to 8 inches long, or less than half the size of those of *P. Forsteriana*; height 20 to 30 feet, with a diameter across the branches of 20 feet; the stems are about 6 inches in diameter and aerial roots are produced on the branches, a peculiarity rarely seen in *Pandanus Forsteriana*."

Pandanus Forsteri, F.v.M., and C. Moore, was described in Mueller's *Fragm.* viii. 220 (1874), and the smaller *Pandanus* was designated *P. Moorei*, F.v.M., (name only) in Mueller's *Census*, p. 140 (1882). As far as I know, it has never been described.

Finally, Hemsley (*op. cit.*) refers to this smaller *Pandanus* as "species imperfecte cognita," and ignores Mueller's mere name.

I went to the island prepared to enquire into this *Pandanus*. I had with me as guide Edward King, who was originally Mr. Moore's guide, and who pointed the trees out to Mr. Duff. He pointed out to me the identical trees specially examined by Mr. Duff, and I have in the Museum of the Botanic Gardens a cone collected by Mr. Duff and labelled "*Pandanus Moorei*, F.v.M."

No plants on the island engaged my closer attention than did the *Pandani*. I examined them from the coast line up to 1,200 feet and endeavoured to persuade myself that there are two species, but this I failed to do. In other words, I am of opinion that there is only one species of *Pandanus* on the island, and that *P. Moorei* has no real existence. It is quite true that the cones vary in size, but not much. The cone of the so-called *Pandanus Moorei* in the Sydney Botanic Museum is unripe and consequently its dimensions are of no value. I searched the island, and the smallest *ripe* cone I could find was not much less in size than the average.

The leaves are sometimes shorter than others, but their size is not constant, even on the same tree.

In some *Pandanus* trees the "forks" or aerial roots start wholly from the stem; in the case of the reputed *P. Moorei* these aerial roots spring from the branches. I found every intermediate stage of aerial root attachment, many trees having these both

from branches and stems. I could find nothing constant in this matter. The most extreme case was said to be a tree near Soldiers' or Deep Creek (not far from Mr. Bowie Wilson's Camp), and was a tree pointed out to Mr. Duff, but I challenged my guide over and over again to show any of its characters of fruits, leaves and aerial roots constant in any part of the island.

Here and there, all over the island, up as high as I ascended (1,200 feet) I found trees with smaller cones; they were never gregarious or confined to one locality. I did my best to find out differences between *P. Forsteri* and *P. Moorei*, and have not succeeded; I brought ample material to Sydney, and examination of this has been attended by negative results.

Pandanus is universally known as Forky-tree on the island. It is not put to any use, not even the leaves. The children break open the drupes and extract the seeds, which they call "almonds," and eat them.

CYPERACEÆ.

CYPERUS HÆMATODES, *Endl.*—This coarse plant forms large tussocks in low-lying parts of the island. It is called "Cutting Grass." Its presence is not objected to as the islanders say it chokes out couch-grass and can itself be easily eradicated prior to cultivation being undertaken.

GAHNSIA XANTHOCARPA, *Hook. f.*—Known as "Sword Grass."

CAREX GRACILIS, *R.Br.*—This sedge goes by the name of "Native Grass." Of course it is not a grass, but some of the islanders state that "all the grasses are introduced, except this one." It is very abundant, particularly in brush land.

GRAMINEÆ.

PASPALUM DISTICHUM, *Linn.*—This species (which is an addition to Hemsley's list) makes rampant growth at Ned's Beach, the Old Settlement, and other parts of the island. It is known as "Bog Grass," although some of the situations in which it was found are well drained. This grass is peculiar in that in many cases the inflorescence is in more than two spikes. In the normal species

there are "spikes 2, close together, or the lower at a distance of 1 to 2 lines." In my specimens 3 spikes frequently spring from the same point or one of them is scarcely below the other two (at a distance of 1 or 2 lines at the utmost). In a few cases there are 4 spikes similarly springing almost from the same point. The presence of more than two spikes naturally suggests *P. scrobiculatum*, but the shape and markings of the outer glumes is precisely that of *P. distichum*, with which it absolutely agrees in all respects saving the number of spikes in some instances. If it be considered to name it a variety on this ground, the name *anomalum* might perhaps be given.

OPLISMENUS COMPOSITUS, *Beauv.*, var. SETARIUS. — On the island they call it "Wallaby Grass" and "Dog's Medicine Grass." The origin of the latter name is obvious; that of the former not so, as there are no wallabies on the island.

PHRAGMITES COMMUNIS, *Trin.* — "Sea Cane or Reed." It is eaten down by the cattle, the stalks being sweet.

SPINIFEX HIRSUTUS, *Labill.* — Known as "Beach Grass." Used for bedding for animals and accounted the best the islanders have for the purpose.

SPOROBOLUS INDICUS, *R.Br.* — "Rat-tail" or "Tussock Grass." Said to have been introduced by Mrs. Robins 30 years ago, but I do not doubt that it was on the island years before that. The cattle crop it but it is not much esteemed.

CHLORIS PUMILIO, *R.Br.* — See Hemsley's note. This grass is recorded by Moore. I made diligent search for it but failed to find it. At the same time it is only proper to say that it was late for most grasses when I visited the island. I was, however, on the island during the same time of the year as Moore.

IMPERATA ARUNDINACEA, *Cyr.* — "Blady Grass." Not in Hemsley's List. I found a large patch near Thompson's.

I find the following in Hill's account (p. 17, folio edition, Publication No. 1 of my Bibliography):—"The grasses are couch*

* *Cynodon dactylon*.

and a tufty grass (*Sporobolus*), introduced. The former has taken possession of all the old cultivations which have been abandoned. Natural grasses are of two or three kinds, and a *Hystrix** binding the beach. I also saw one patch of blady-grass (*Imperata arundinacea*), but whether this is indigenous to the island I should think doubtful, as it was growing in the midst of the couch-grass, and may have been brought with it to that place." *Imperata* is not in Moore's lists of plants (1869 and 1871), and I was not aware of Hill's reference to *Imperata* until a few days ago. If we exclude *Cynodon*, *Sporobolus* and *Imperata* from the list of indigenous vegetation I hardly know where we should stop; certainly many have no greater claims for inclusion.

CRYPTOGAMS.

CYATHEA BREVIPINNA, *Baker*.—Hemsley says: "This is most likely the plant referred to in Mueller's list (*Fragm.* ix. 78) as *C. medullaris*, Sw." This surmise is correct. Following is a copy of a label of this plant in Mueller's handwriting: "Cyathea medullaris, Sw. var. pinnulis brevioribus et obtusioribus."

CYATHEA MACARTHURII, *F.v.M.*—This is a tree-fern with a black, prickly stem. The rhachis usually covered with a brown scurf. The pinnules dry, pale on the under side.

Tree-ferns have frequently subconical stems for 2 or 3 feet above the ground; I measured one of this species which was 70 inches in circumference 2 feet above the ground. I saw several which appeared to be 60 or 70 feet high (Lind & Fullagar state 10 to 12 feet).

ALSOPHILA ROBUSTA, *C. Moore*, Hort. Syd. (*Syn. Alsophila excelsa*, R.Br., var., Mueller, Herb. Melb. (*A. excelsa*, R.Br., *Fragm.* ix. 78); *Alsophila australis*, R.Br., var. ? *nigrescens*, Benth. B. Fl. vii. 710).—Under *Alsophila australis*, R.Br. var. *nigrescens*, Hemsley follows Bentham in so naming a plant to which the name *A. robusta* had been given by Mr. C. Moore. *A.*

* *Spinifex hirsutus*.

robusta has been cultivated in the Sydney Botanic Gardens for many years and herbarium specimens have been distributed from this establishment under that name, but apparently Mr. Moore never described it.

It is very distinct from *A. australis*, and I think it should rank as a species. I would lay stress on the fact that *Alsophila* can only be satisfactorily studied from living specimens.

A. robusta grows as strong as *Cyathea medullaris* which it superficially resembles in the size, swelling and the glaucousness of the stipes and rhachises. *A. australis* is quite a weak grower in comparison.

A. australis, var. ? *nigrescens* is stated by Bentham to have "stem black and prickly." *A. robusta* is not prickly, but this would apply to *Cyathea Macarthurii*. The height, "10-12 feet," is understated. I have seen them twice this height, but do not know to what height they may attain.

The peculiar glaucous appearance of the stipes and rhachises at once attracts attention. The stipes is very turgid near its place of attachment to the stem; the rhachises also are swollen and fleshy.

The prickles on the rhachis of *A. australis* are usually larger and much more abundant than on *A. robusta*, but this is not a reliable character. In *A. robusta* they are more conspicuous by reason of their dark colour on a glaucous ground.

In *A. robusta* the fronds fall off and leave a scar. Not so *A. australis* as a rule, in which the dead fronds have to be cut off, leaving the bases of the old fronds attached right up the trunk.

In *A. robusta* the pinnules are more fleshy and more crowded together than in *A. australis*. In *A. robusta* they always overlap the rhachis.

The pinnae are from 30-40 in *A. robusta* and usually 20-30 in *A. australis*.

We have no evidence that this fern is found anywhere else than in Lord Howe Island.

TRICHOMANES APIIFOLIUM, Presl.—Known as "Parsley Fern."

TRICHOMANES JAVANICUM, *Blume*.—I received this fern from Mr. Robert Etheridge, Curator of the Australian Museum. It was collected by himself and Mr. Thomas Whitelegge on their visit to the island in 1887. Locality, Soldiers' or Deep Creek. It is not in Hemsley's list, and is therefore an addition to the flora of the island.

ASPLENium ROBINSONII, *F.v.M.*—"Crimpy Bird's Nest Fern." Hitherto only recorded from Norfolk Island, has been found by Edward King on Mt. Gower in a locality that need not be more definitely indicated for the present. This is a remarkable fern, so much sought after in Norfolk Island that it has been almost exterminated. King, who is the collector for the Botanic Gardens, informed me that he collected three and lost them by the swamping of his boat. I have not seen the fern from Lord Howe Island, but include it on his authority as he is a reliable man and knows the Norfolk Island fern well.

ASPLENium OBTUSATUM, *Forst.*, var. *LUCIDUM*, *Benth.*—Hemsley (perhaps through inadvertence) appears only to take cognizance of var. *incisum*, but Bentham (*B. Fl.* vii. 747) also records var. *lucidum*, of which I collected specimens.

ASPLENium PTERIDIODES, *Baker*.—"Celery Fern."

ASPIDIUM ACULEATUM, *Sw.*, var. *MOOREI*, *Christ*.—Specimens of a fern from rocks on the east side of Mt. Lidgbird received from E. King were sent by my predecessor (Mr. Charles Moore) to Dr. H. Christ, of Basle, who named them as above. Following is a description contained in a letter by Dr. Christ, received early in 1896; I do not know where it has been published:—

"Nanum. Stipes nullus. Pinnis deltoideis, pinnulis petiolatis, obtuse triangulis, ad basim profunde, supra modice pinnatifidis, lobis obtusissimis crenatis, soris minutis medialibus. Rachis infra squamis bruneis longis dense vestita. Frons late deltoidea a basi tripinnatifida."

It may readily be mistaken for a dwarf form of *A. capense*, Willd. I collected specimens on the west side of the island, about half a mile from the base of Mt. Lidgbird, near Johnson's

Reef (mouth of Soldiers' or Deep Creek). The identical spot was the rocks in the foreground of the photograph entitled "Mount Gower from the Camp," facing page 18 of *Wils. Rep.* The same rocks are figured at Plate vii. of Etheridge's Report (Australian Museum, Memoir 2) 1889. When I showed King the fern he professed to know it and called it "Crimp Fern." It is an addition to Hemsley's list.

I propose to postpone consideration of the Mosses, Lichens, Fungi and Algæ of Lord Howe Island for the present.

Timber-trees.—The Hon. Bowie Wilson in his Report, dated 17th April, 1882, states (p. 2): "None of the timber growing on the island is of any value for industrial, economic or commercial purposes, &c." This is a very sweeping statement, but even yet we know but little about the timbers. The experience of the islanders in regard to them is confined to those growing below 800 feet. No timber will last longer than 12 months in the coral sandy soil; in muddy holes in stiff soil, yellow wood (*Acronychia*, &c.) is very durable, and it is believed will last a life-time.

Herewith is a list of the trees of say 30 feet and upwards in height, and hence including all those which can form the timber-supply of the islanders. A few others may be included after I have made a further visit to the island.

- Lagunaria Patersoni*, G. Don.
- Melicope contermina*, C.M. et F.v.M.
- Zanthoxylon Blackburnia*, F.v.M.
- Acronychia Baueri*, Schott.
- Dysoxylon Fraserianum*, Benth.
- Eleodendron curtispiculum*, Endl.
- Cupania Howeana*, Maiden.
- Sophora tetraptera*, J. Mill.
- Acicalyptus Fullagari*, F.v.M.
- Panax cissodendron*, C.M. et F.v.M.
- Randia stipulosa*, C.M. et F.v.M.
- Dracophyllum Fitzgeraldi*, F.v.M.
- Sideroxylon Howeianum*, F.v.M.

Blue Plum.

Symplocos Stawelli, F.v.M.

Olea paniculata, R.Br.

Myoporum insulare, R.Br.

Cryptocarya triplinervis, R.Br.

Hemicyclia australasica, Muell. Arg.

Baloghia lucida, R.Br.

Ficus columnaris, F.v.M. et C.M.

Hedyscepe Canterburyana, Wendl. et Drude.

Howea (Kentia) Belmoreana, Becc.

Howea (Kentia) Forsteriana, Becc.

Pandanus Forsteri, C.M. et F.v.M.

Black Plum.

INTRODUCED WEEDS

(INCLUDING SOME USEFUL ONES).

Although Mr. Hemsley's list is an enumeration of all the "indigenous" plants known to inhabit the island, he has seen fit to include therein certain introduced plants; perhaps it would be desirable to exclude these, and to place them in a separate list. Unless this be done there will be no finality in a list of the flora, one reason being that weeds are sometimes exterminated by human agency, a circumstance as yet unknown with any species indigenous in the island, and which if they do not decrease certainly do not increase in number of species.

The islanders now seem alive to the danger of allowing noxious weeds to obtain a footing. For example, the Bathurst Burr (*Xanthium spinosum*) and the Black Thistle (*Carduus lanceolatus*) were got rid of by concerted action.

There were also a few patches of the dangerous weed, Nut Grass (*Cyperus rotundus*), but this has been exterminated. There were also a few patches of Wild Onion (*Allium fragrans*, Vent.) which were nursed by one of the settlers as a pretty plant. When its nature was discovered it took four years to exterminate it.

I think the following plants in Hemsley's list were probably introduced by the hand of man during the present century :—*Oxalis corniculata*, Linn., *Bidens pilosa*, Linn., *Panicum sanguinale*, Linn. To these I might perhaps add *Solanum nigrum*.

I now propose to add notes on some weeds collected by me, indicating whether they have been previously recorded or not, and giving some notes of more or less interest in regard to them, just as I have done in the case of introduced plants.

CRUCIFERÆ.

SENEBIERA DIDYMA, *Pers.*—Abundant. Recorded originally by Moore.

CARYOPHYLLEÆ.

CERASTIUM VULGATUM, *Linn.*—A Chickweed (Mouse-ear) not recorded.

POLYCARPON TETRAPHYLLUM, *Loefl.*—Abundant. Not recorded.

PORTULACA OLERACEA, *Linn.*—“Pig-weed” or “Purslane.” Not recorded. So abundant in some places as to be used with sweet potato vines for pig-feed.

LEGUMINOSÆ.

MEDICAGO DENTICULATA, *Willd.*—Not recorded. Plentiful. Not a noxious weed, as there are no sheep on the island; at certain seasons it is a useful fodder plant. At the same time it is often a nuisance in gardens and other cultivation patches.

VICIA SATIVA, *Linn.*—“Vetch.” Not recorded. Several patches in the long grass close to the beach near Thompson's landing-place.

CASSIA LÆVIGATA, *Willd.*—Not recorded. I observed a thicket of this at the back of Mrs. T. Nicholls' ground. It goes by the ridiculous name of “Myrtle” on Norfolk Island, where it became such a pest that a regulation was adopted under which it was exterminated. I strongly urged its eradication in Lord Howe Island.

COMPOSITÆ.

ERIGERON LINIFOLIUS, *DC.*—"Cobbler's Pegs." Not recorded Abundant at the present time.

BIDENS PILOSA, *Linn.*—No. 59 in Hemsley's list. Very abundant, and locally known as "Teaser" for obvious reasons. It was brought with potatoes by whalers from Sunday Island, Macaulay Group, near New Zealand.

TARAXACUM DENS-LEONIS, *Desf.*—"Dandelion." Not recorded. A note in regard to this plant has been given at p. 154.

SOLANACEÆ.

SOLANUM NIGRUM, *Linn.*—Not recorded. Springs up wherever land is cleared. It is known as "Black Currant," the fruits being occasionally used for jam, as on the mainland.

SOLANUM AVICULARE, *Forst.*—No. 86 in Hemsley's list. Known as "Bully-bully" (said to be the Maori name). "Kangaroo Apple." Mrs. T. Nicholls says she has seen the Maoris eat the fruits, but Europeans could not.

PHYSALIS PERUVIANA, *Linn.*—"Cape Gooseberry." Springs up in many places where land is cleared. Not in Hemsley's list.

VERBENACEÆ.

VERBENA BONARIENSIS, *Linn.*—Recorded by Moore. Known all over the island as "Gin-case." It first sprang up where the packing of a gin-case was emptied out, about 40 years ago. At first it was encouraged, as a pretty plant, but now it is a serious pest, although lightly spoken of by some, as the cattle nip it.

CHENOPODIACEÆ.

CHENOPODIUM MURALE, *Linn.*—Not hitherto recorded.

NYCTAGINEÆ.

MIRABILIS JALAPA.—"Marvel of Peru." A large patch on Mrs. T. Nicholls' ground. An escape from cultivation.

EUPHORBIACEÆ.

RICINUS COMMUNIS, *Willd.*—"Castor Oil Plant." Introduced to the island by Dr. Foulis, who employed it for medicinal purposes. It is now a great nuisance, as it is spreading in the brushes and injuring the native vegetation. Cattle keep it down in most places where they can get at it. Already noted by Moore.

GRAMINEÆ.

CERATOCLOA UNIOLOIDES, *DC.*—"Prairie Grass." Not recorded. This useful grass was originally introduced (by seed) several years ago; it is now well established in many parts of the island.

STENOTAPHRUM AMERICANUM, *Schrank.*—"Buffalo Grass." Introduced by Mrs. Cavaye about five years ago, and spreading.

AVENA SP.—"A bearded Wild Oat." Said to be plentiful, and described to me clearly by two witnesses. I did not see it, at all events in flower or grain.

EDIBLE INTRODUCED FRUITS.

Following are on the island up to the present time :—

Apples, an eating and a cooking.

Pear, cooking.

Quince.

Peaches.

Plum (Black Diamond).

Apricots.

Loquats (these and many other fruit trees were received via Norfolk Island).

Orange, of which there are some magnificent trees on Mrs. T. Nicholls' land of great size, in full bearing, and without a trace of disease, as far as I could see. They were introduced by Mr. Andrews (Mrs. Nicholls' father) about 1860 from Tahiti, pips having been planted on board the American whaler "Napoleon." This was the beginning of Citrus cultivation in Lord Howe Island.

In addition there are other Orange trees, also Seville Oranges, Mandarin Oranges and Lemons ; also one Lime and one Citron.

Strawberries have been tried and have been exterminated by birds.

Mulberry, the edible one ; also the White Mulberry for silkworms.

Turkey Fig.

Cape Gooseberry, introduced by a Mr. Hastnett, and now a weed.

Pomegranate.

Pea-nut (*Arachis*).

Passion-fruit.

Cherimoyer apparently flourishes, but it is a shy fruiter.

Grape-vine (Black Hamburg and Muscatel), does not flourish here; the climate is too wet. The islanders allow them to grow prostrate.

Yellow Guava, from Tahiti, viâ Norfolk Island.

Black or Purple Guava.

Bananas were originally introduced by Dr. Foulis, and are one of the staples of the island. They grow the Cavendish, Plantain and Sugar Banana.

Pine-apple exists, but does not flourish.

Papaw (*Carica Papaya*). There are several plants on the island, and they are universally known as Mammee Apple, usually pronounced "Mummy." Wyatt Gill, "Jottings from the Pacific," p. 183, has the following note on the subject: "It is amusing in printed and written lists of prices of produce at different islands to read Mammy Apple; never Papaw Apple. This originated in the ignorance of the early whaling captains who took *papaw* for *papa*, and then by way of joke converted it into *Mammy*." It is to be regretted if the proper name, Papaw, cannot be re-introduced, as it is probable that inconvenience may be caused by confusion with the true Mammee Apple (*Mammea americana*) or South American Apricot, an esteemed fruit of South America.

Bread-fruit--I was informed that there was a Bread-fruit tree on the island and the islanders, many of whom have spent much

time in the tropics, ought to know it, but a handsome young tree in front of Mrs. T. Nicholls' house which goes under this name is Candle-nut tree (*Aleurites triloba*).

Date Palms have not flowered yet.

Coco-nut Palm fails.

I have introduced the Olive into the island ; it should do well.

VEGETABLES, AND MISCELLANEOUS FOOD-CROPS.

All sorts of vegetables are known or have been grown in the island. The islanders only get one crop (a winter one) of cabbages, cauliflowers and other cruciferous vegetables, because of the prevalence of aphids.

Lord Howe onions are celebrated in the southern hemisphere. At one time they formed the staple of the island, but the prevalence of smut has severely damaged the industry. They grow a small pickling onion and a larger sort. These onions have excellent keeping qualities. The industry commenced about fifty years ago through the finding on the beach (by Mrs. Andrews) of two or three onions which had been thrown overboard from a passing vessel.

Sweet potatoes are very largely grown, and pigs are principally fed on the vines. Yams are grown to a less extent.

The mountain Taro of Fiji has been received via New Zealand, and was rather largely grown at one time, but it is not cultivated now. The same remarks apply to the Onion Arrowroot (*sic*) of Fiji (? *Tacca*). Two kinds of Arrowroot are still grown on the island, viz, what they call "Indian Shot Arrowroot" (*Uiana*) and "Potato Arrowroot."

Mr. Henry Wilkinson in his Report (p. 20) speaks of "Sago," but I observed none.

Sugar cane is grown for pigs, and is also eaten by youngsters.

Chocho (*Sechium edule*) is also on the island, but does not appear to be esteemed.

SOME MISCELLANEOUS INTRODUCED PLANTS
(CHIEFLY ECONOMIC).

Coffee—There are two kinds, one from Norfolk Island and the other from the Sydney Botanic Gardens. The plant flourishes in the sandy soil.

Tea has failed, the island being too windy.

Ginger has been grown by Mr. Edward King from rhizomes brought from Fiji, but is now extinct.

Capsicum frutescens, Linn.—“Bird’s Eye Pepper,” from Fiji, also Chillies are grown.

Tobacco grows like a weed, but is not utilised.

Aleurites triloba, Forst. (Candle Nut).—There is a young tree of 8 or 10 feet in front of Mrs. T. Nicholls’ house. Erroneously called “Bread-fruit.”

Aloe sp. (Blue Aloe).—This Aloe is abundant. It was introduced by Dr. Foulis for medicinal purposes, it is said. I brought a plant over for cultivation in order to determine the species.

Musa textilis, Nees. (Fibre banana or Manilla hemp).—Has been tried, but it grew too tall and the wind destroyed it.

Cotton.—There is too much wind for this fibre-plant, the cotton being blown out of the capsules.

Sorghum is grown for pig-feed. Considerable quantities of maize are grown; there are also patches of lucerne.

Teosinte (*Euchlaena luxurians*).—I noticed a few plants of this, but it has almost gone out of cultivation. The seed was originally sent by Baron von Mueller.

Dandelion (*Taraxacum*) was introduced by the late R. D. Fitzgerald for the cattle. It has now spread over most of the grass-land. It is, in fact, rapidly destroying the couch-grass in places.

Eucalyptus globulus, Labill. (Blue Gum of Victoria and Tasmania).—Introduced by Mr. Nat Thompson about 14 years ago as a shelter. The trees are 30 or 40 feet high. They cannot stand the wind and are all dying back.

Salix babylonica, Linn. (Weeping Willow).—One plant only.

Gaillardia picta, Sweet.—This garden plant is an escape near the Old Settlement, and has extensively spread in the grass-land, for about 2 acres.

Acalypha Wilkesiana, Muell. Arg.—Fine plants from Fiji in several gardens.

I introduced into the island last month (May) the following plants (amongst others), most of which do not appear to have been tried on the island. Some of them are intended to be tested as regards their power of resistance to the wind :—

Pinus insignis, *P. pinea*, *Grevillea robusta*, *Laurus camphora*, *Quercus virens*, *Q. suber*, *Olea europea*, *Schinus molle*, *Tristania conferta*, *Ligustrum lucidum*, *Pittosporum eugenioides*, *Escallonia montevidiense*.

SOME LORD HOWE ISLAND DISHES.

Following are some dishes more or less used by the islanders :—

1. "Pill-eye." A bucketful of grated sweet potato to a saucer of flour, and admixed with a little fat. Baked in an oven like a loaf of bread.

2. Green bananas boiled in their skins; a substitute for potatoes. A Norfolk Island dish.

3. Pudding made of ground corn (maize) and ripe bananas.

4. Heart of Palm-tree (*Kentia*) was boiled as a vegetable in former times. It tastes like a cabbage stump. They more strictly conserve the palms now.

5. Sow Thistle and Purslane were formerly much used as a substitute for cabbage; they are used to a small extent now.

6. Taro leaves are eaten, although they are rather slimy; sweet potato leaves are likewise used as cabbage-substitutes.

7. Mutton-birds and their eggs are largely used for food in the proper season, so also are the eggs of the Wide-a-wake and Gannet. Mutton-bird fat is used by some for cooking, but it has a fishy taste.

SUMMARY OF RESULTS.

As already stated, I have taken Hemsley's Flora as a basis, and following is a list of the species enumerated in my list to which I especially invite attention.

ADDITIONS TO THE INDIGENOUS FLORA.

Cakile maritima, Scop.; *Cupania Howeana*, Maiden, n.sp.; *Elæodendron curtispiculum*, Endl., (also in Norfolk Island); *Cotula australis*, Hook. f.; *Sonchus oleraceus*, Linn.; *Plectranthus parviflorus*, Willd.; *Salicornia australis*, Sol.; *Rumex Brownii*, Campd.; *Paspalum distichum*, Linn., (the inflorescence sometimes with three, and occasionally with four spikes); *Imperata arundinacea*, Cyr.; *Alsophila robusta*, C. Moore, (in lieu of *A. australis*, R.Br., var. *† nigrescens*, Benth.); *Trichomanes javanicum*, Blume (collected by Etheridge and Whitelegge); *Asplenium Robinsonii*, F.v.M., (reported by King, but specimens not seen by me; also in Norfolk Island); *Asplenium obtusatum*, Forst., var. *lucidum*, Benth.; *Aspidium aculeatum*, Sw., var. *Moorei*, Christ, (has perhaps, in some instances, been mistaken for a dwarf form of *A. capense*, Willd.); and genera ? (Blue Plum, and Black Plum).

INTRODUCED PLANTS (ADDITIONS).

Hemsley's list contains:—*Oxalis corniculata*, Linn.; *Bidens pilosa*, Linn.; *Panicum sanguinale*, Linn.

To which I have added:—*Senebiera didyma*, Pers.; *Cerastium vulgatum*, Linn.; *Polycarpon tetraphyllum*, Loeffl.; *Portulaca oleracea*, Linn.; *Medicago denticulata*, Willd.; *Vicia sativa*, Linn.; *Cassia leviyata*, Willd.; *Erigeron linifolius*, DC.; *Taraxacum Dens-leonis*, Desf.; *Solanum nigrum*, Linn.; *Physalis peruviana*, Linn.; *Verbena bonariensis*, Linn.; *Chenopodium murale*, Linn.; *Ricinus communis*, Willd.; *Ceratochloa unioloides*, DC.; *Stenotaphrum americanum*, Schrank; *Avena* sp.

SUPPOSED INDIGENOUS PLANTS (REMOVALS FROM HEMSLEY'S LIST).

Calophyllum inophyllum, Linn.; *Elæodendron australe*, Vent.; *Elæodendron melanocarpum*, F.v.M., (these two species were recorded through confusion with *E. curtispiculum*, Endl.); *Cupania anacardioides*, A. Rich.; *Cupania semiglauca*, F.v.M., (these two species were recorded from imperfect material, and are to be referred to *C. Howeana*, Maiden).

INDIGENOUS SPECIES MARKED DOUBTFUL IN HEMSLEY'S LIST, BUT DOUBTS NOW REMOVED.

Lepidium foliosum, Desv., (confirmed); *Pandanus* (species imperfecte cognita) removed from list as having no distinct existence; *Chloris pumilio*, R.Br., (recommended to be removed).

Hemsley records 206 plants and three introduced ones, total 209. I have added 16 species and one named variety to the indigenous flora, and 17 species of introduced plants, while I have removed five species of supposed indigenous plants from Hemsley's list, as the records were based on erroneous information. So that, according to my paper, the flora of Lord Howe Island stands at present at 217 indigenous species, (being a net addition of 11), and 20 introduced ones.

REFERENCE TO PLATES.

(Plate 1.)

**Cupania Howeana*.

- Fig. 1.—Twig, with leaflets, flowers and fruit (some leaflets removed; the lower leaflets often broader).
 Fig. 2.—Flower expanded (mag.).
 Fig. 3.—Sepal (mag.).
 Fig. 4.—Petal (mag.).
 Fig. 5.—Stamens and ovarium (mag.).
 Fig. 6.—Stamens, top and bottom view (mag.).
 Fig. 7.—Fruit, the valves open (nat. size).
 Fig. 8.—Fruit, top view (nat. size).
 Fig. 9.—Seed, showing funicle, also remains of arillus.
 Fig. 10.—Seed (arillus removed), nat. size.
 Fig. 11.—Embryo, slightly enlarged.

(Plate II.)

Blue Plum.

Fig. 1.—Fruit. The shape varies from that shown to egg-shaped and oval

Fig. 2.—Endocarp.

Fig. 3.—Endocarp, showing suture.

Fig. 4.—One cotyledon, showing embryo.

(All nat. size.)

(Plate III.)

Black Plum.

Fig. 1.—Leaf.

Fig. 2.—Fruit. This is a faithful reproduction of a somewhat dried specimen. When perfectly fresh the fruit is slightly larger and scarcely exhibits externally the separation of the cotyledons.

Fig. 3.—Cotyledons.

Fig. 4.—Single cotyledon, showing embryo.

Fig. 5.—Embryo.

Fig. 6.—Longitudinal section and embryo.

(Figs. 5 and 6, much enlarged ; 1-4, nat. size.)

(Plate IV.)

Hedyscepe Canterburyana.

Fig. 1.—Top of ripe spatha, showing parallel markings (nat. size).

Fig. 2.—Outline of an immature spatha, showing scurf along portion of the margin, also (by shading) the immature inflorescence enclosed.